

Closed Loop Multiple Transmit, Multiple Receive Antenna  
Wireless Communication System

ABSTRACT OF THE DISCLOSURE

A wireless receiver (74) for receiving signals from a transmitter (72). The transmitter comprises a plurality of transmit antennas ( $TAT_1'$ ,  $TAT_2'$ ) for transmitting the signals, which comprise respective independent streams of symbols. Additionally, interference occurs between the respective streams. The receiver comprises a plurality of receive antennas ( $RAT_1'$ ,  $RAT_2'$ ) for receiving the signals as influenced by a channel effect between the receiver and the transmitter. The receiver also comprises circuitry (80) for multiplying the signals times a conjugate transpose of an estimate of the channel effect and times a conjugate transpose of a linear basis transformation matrix. The receiver also comprises circuitry (84) for selecting the linear basis transformation matrix from a finite set of linear basis transformation matrices. Lastly, the receiver comprises circuitry (88) for removing the interference between the respective streams.

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